

# *Freight Analysis Framework*



U.S. Department  
of Transportation  
**Federal Highway  
Administration**

*Bruce Lambert*

# *Freight Analysis Framework*

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- Developed by Federal Highway Administration to understand and forecast commodity movements in the U.S.
- Integrates place-to-place commodity flow data, and assigns flow to the modal networks.
- Ability to analyze changes in flows or networks.
- Modes included: Trucks, Railroads, Water and Air.
- Commodity Detail: 2 and 4 Digit STCC.
- Base Year- 1998      Forecasts- 2010, 2020.

# Methods

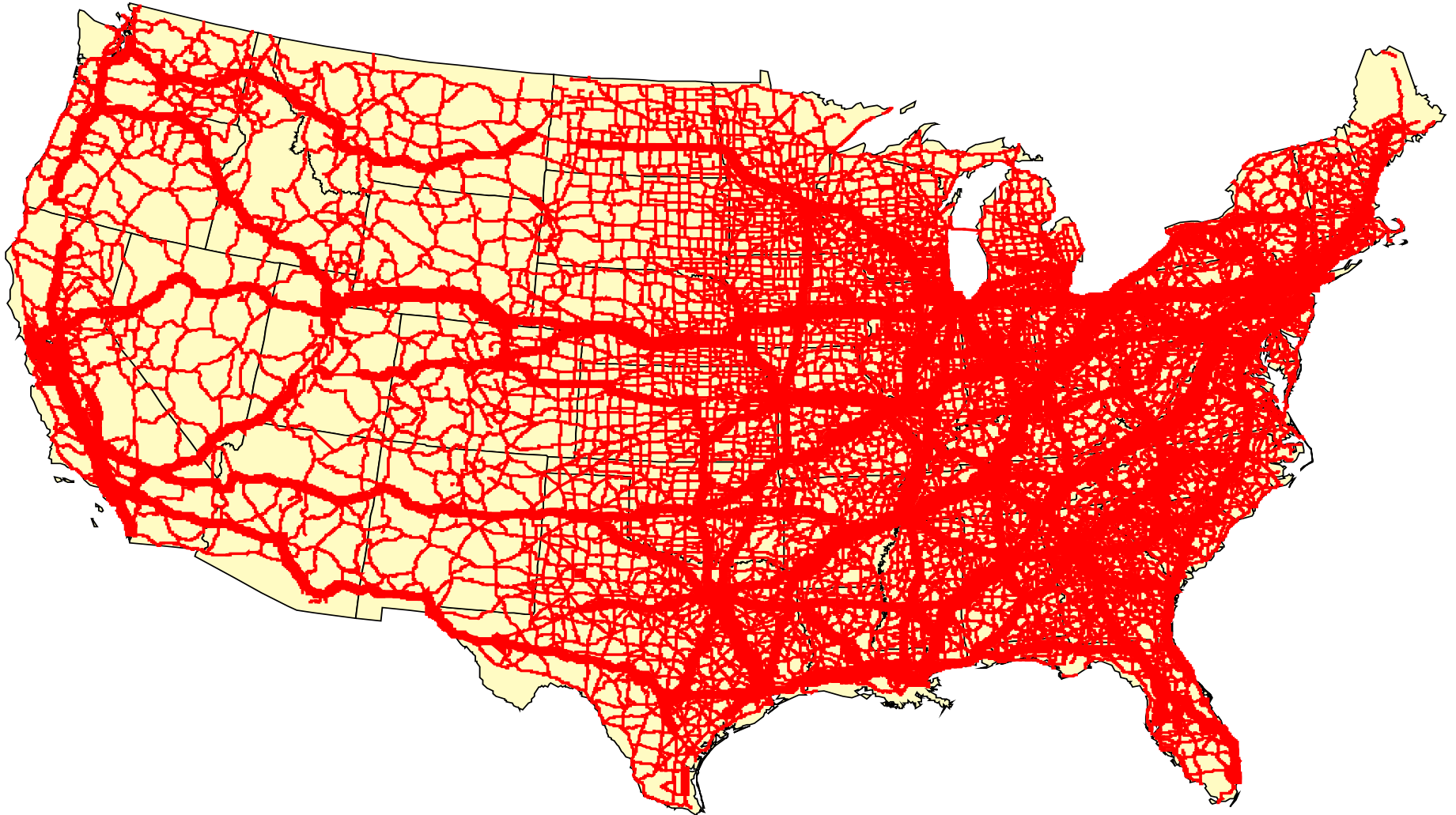
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- Flows are estimated at the county-to-county level by mode and commodity
- Flows are assigned to highway, railroad, waterway, and air networks
- National and regional forecasts applied to flows
- Mode shares change only if commodity mix changes
- Volume, mode shares, and networks, can be changed for policy scenarios.

# *Truck Freight Flows, All Commodities*

*All truck types; highway freight density in tons*

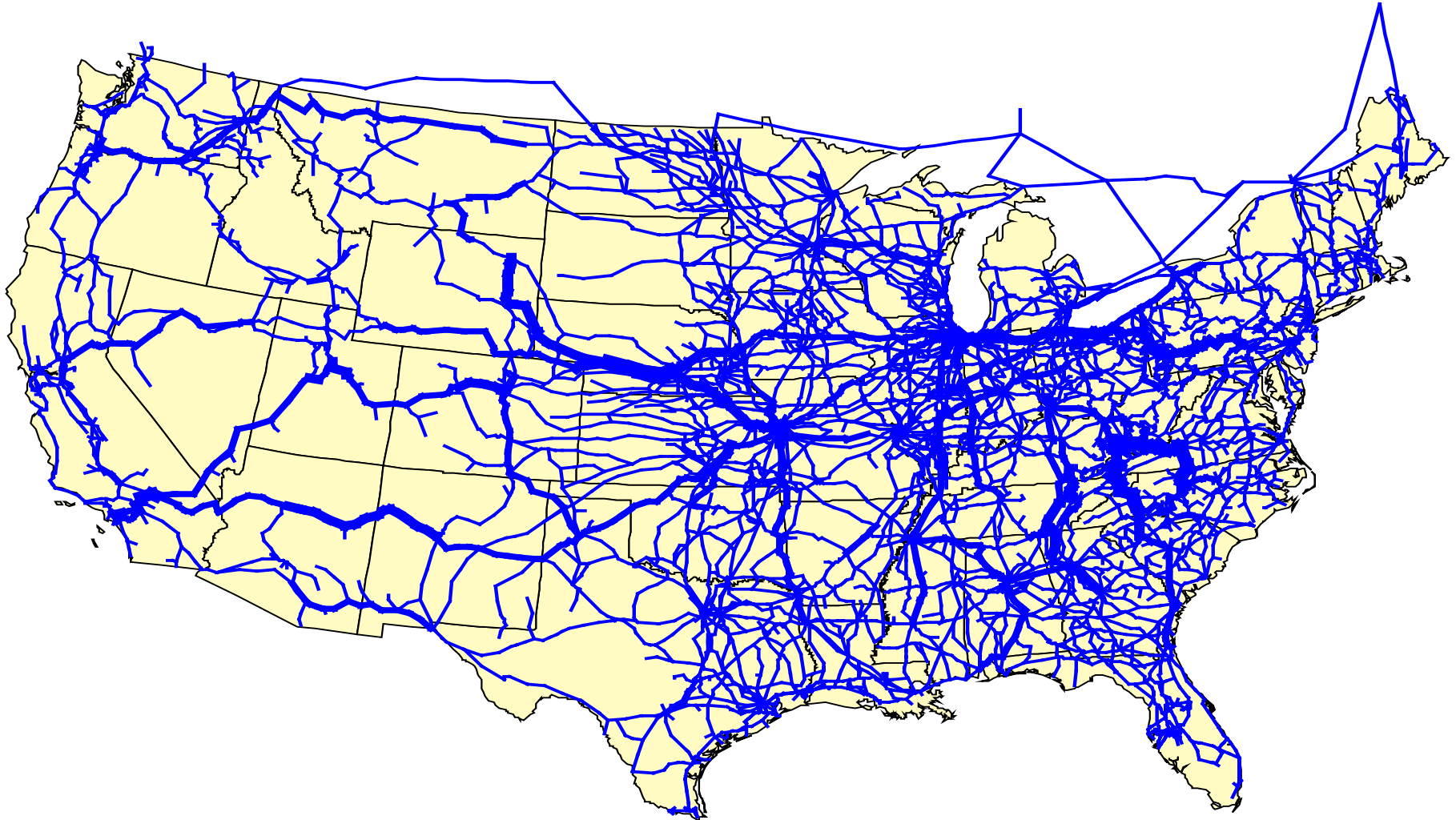
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# *Rail Freight Flows, All Commodities*

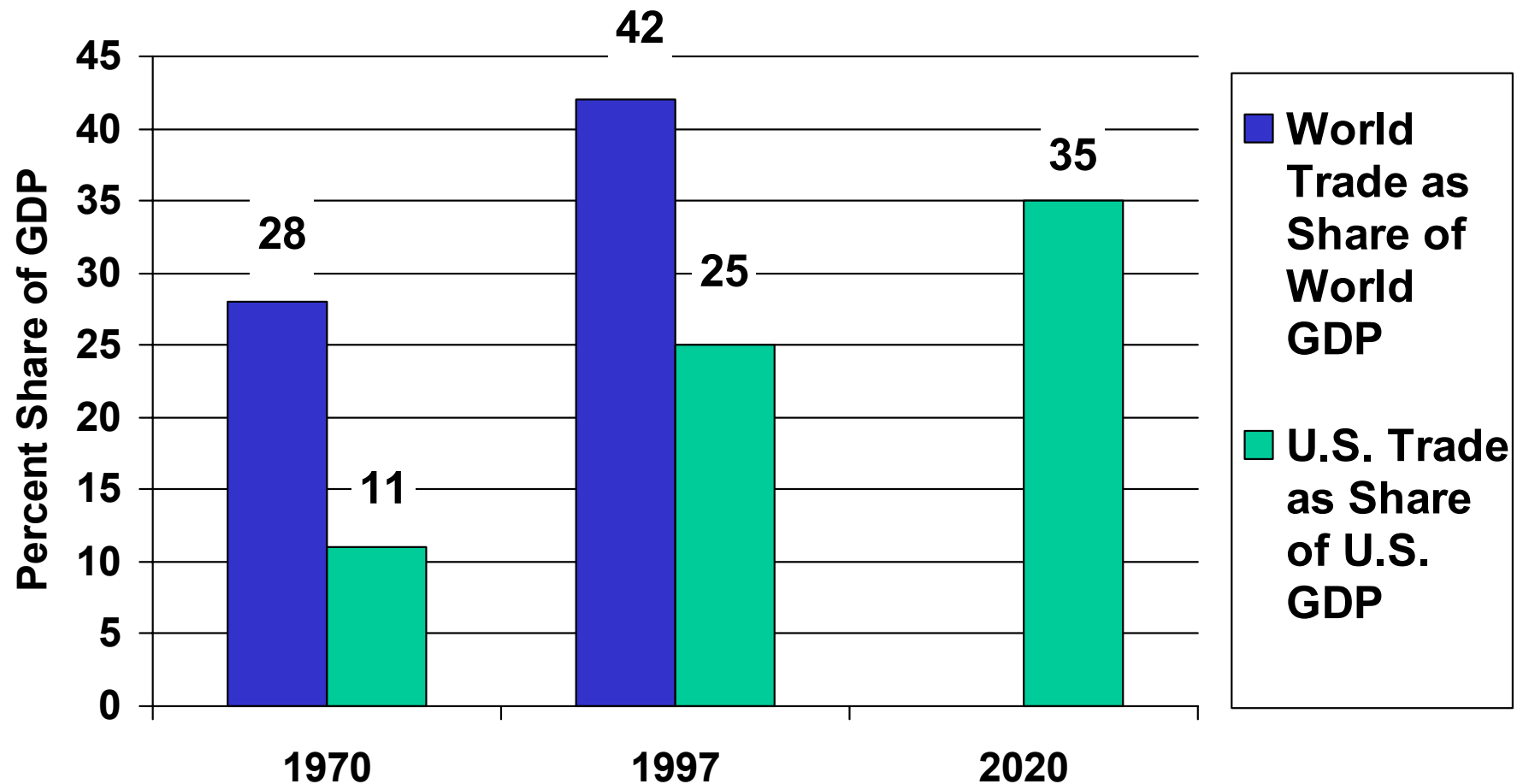
*Rail freight density in tons*

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# World and U.S. Merchandise Trade

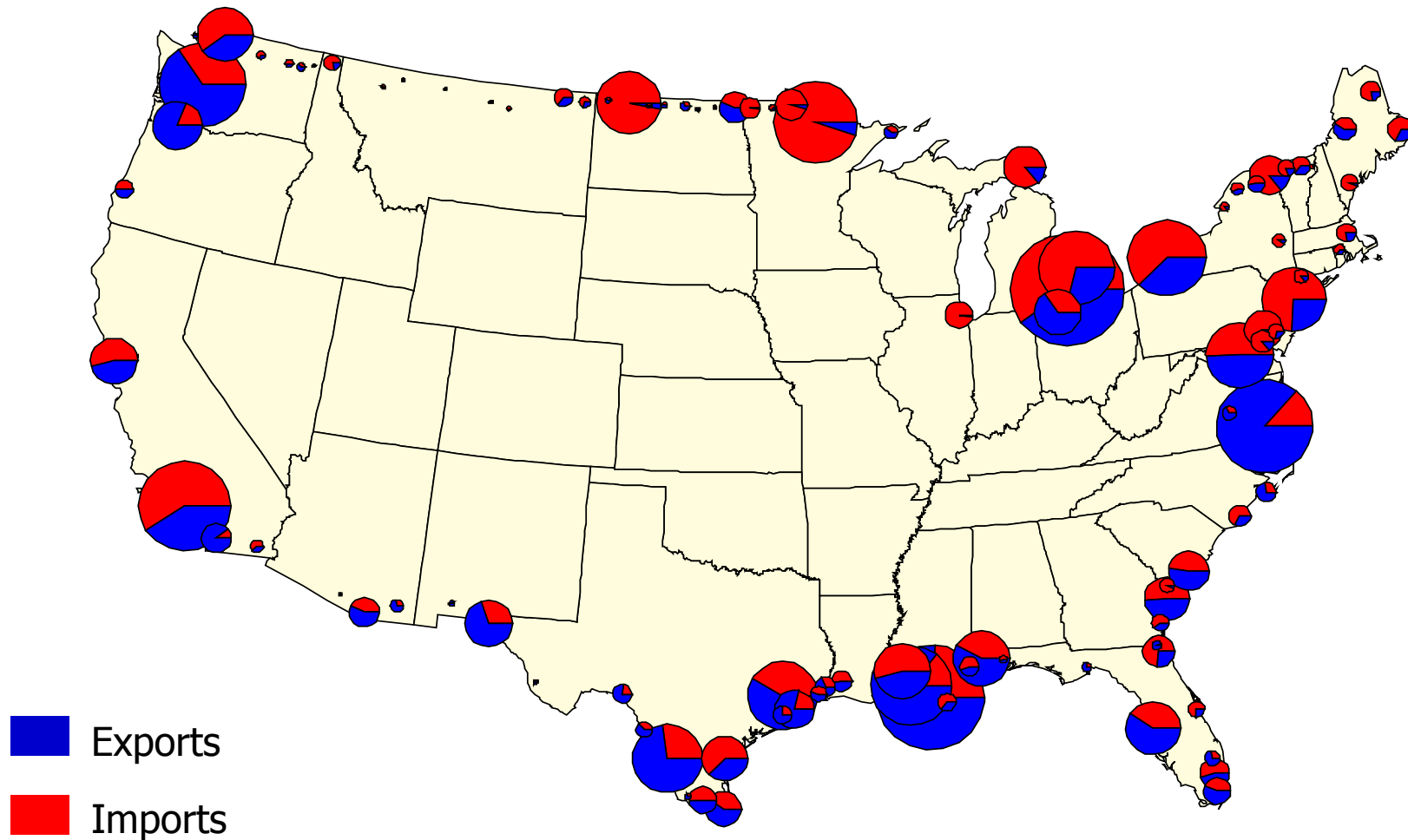
Trade is growing and now accounts for 25% of U.S. GDP, up from 11% in 1970...expected to increase to 35% by 2020

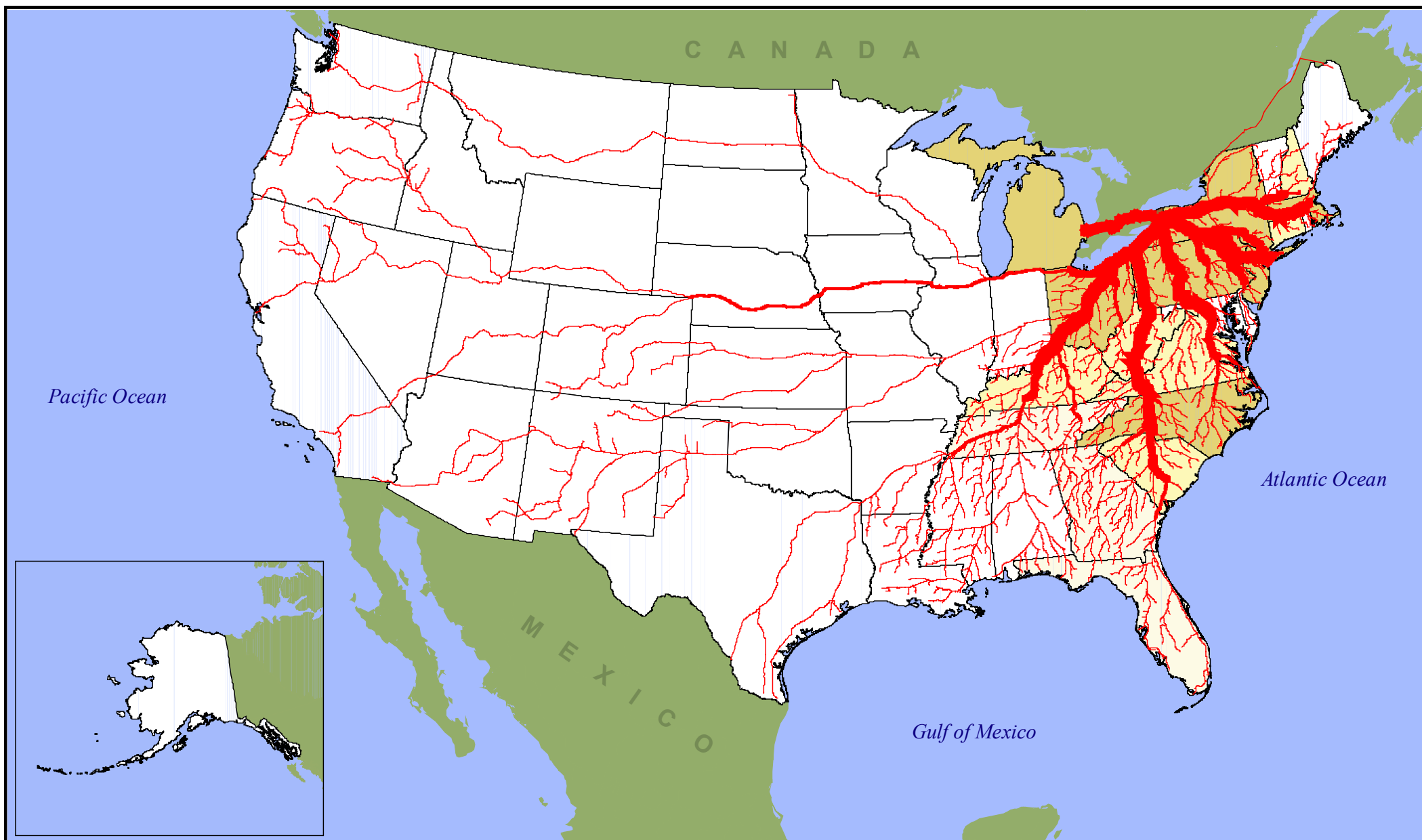


Source: World Bank, World Development Indicators 1999

# *Top U.S. Gateways for International Freight - Exports Imports in Tons*

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# BUFFALO

International Truck Flows for  
 Border Crossings  
 (1998)

Border Crossing to State Flows (Tons)	
	1 to 250,000
	250,001 to 500,000
	500,001 to 1,000,000
	More than 1,000,000

Network Flows (Tons)	
	1 to 250,000
	250,001 to 500,000
	500,001 to 1,000,000
	More than 1,000,000





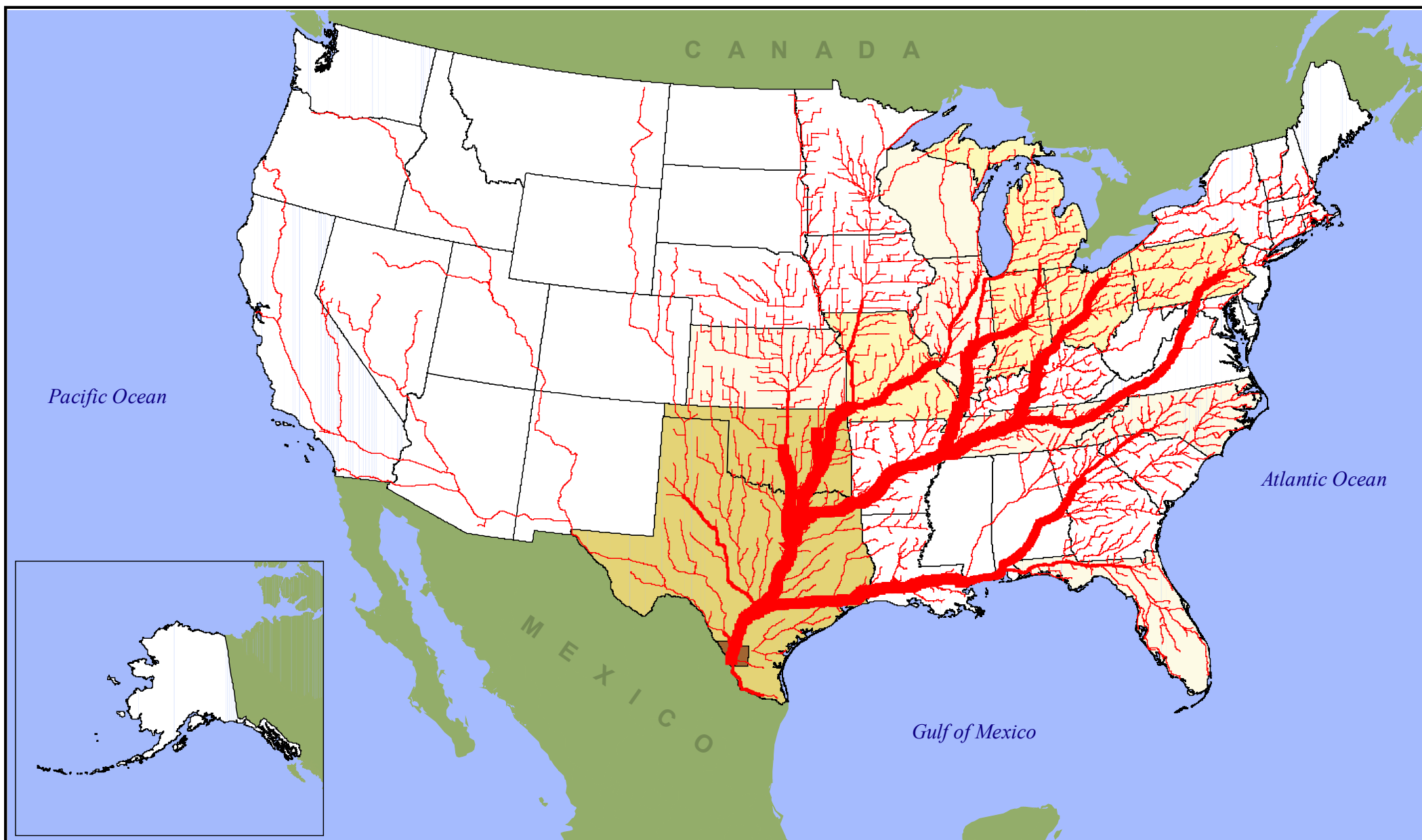
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# DETROIT

## International Truck Flows for Border Crossings (1998)

Border Crossing to State Flows (Tons)	
	1 to 250,000
	250,001 to 500,000
	500,001 to 1,000,000
	More than 1,000,000

Network Flows (Tons)	
	1 to 250,000
	250,001 to 500,000
	500,001 to 1,000,000
	More than 1,000,000



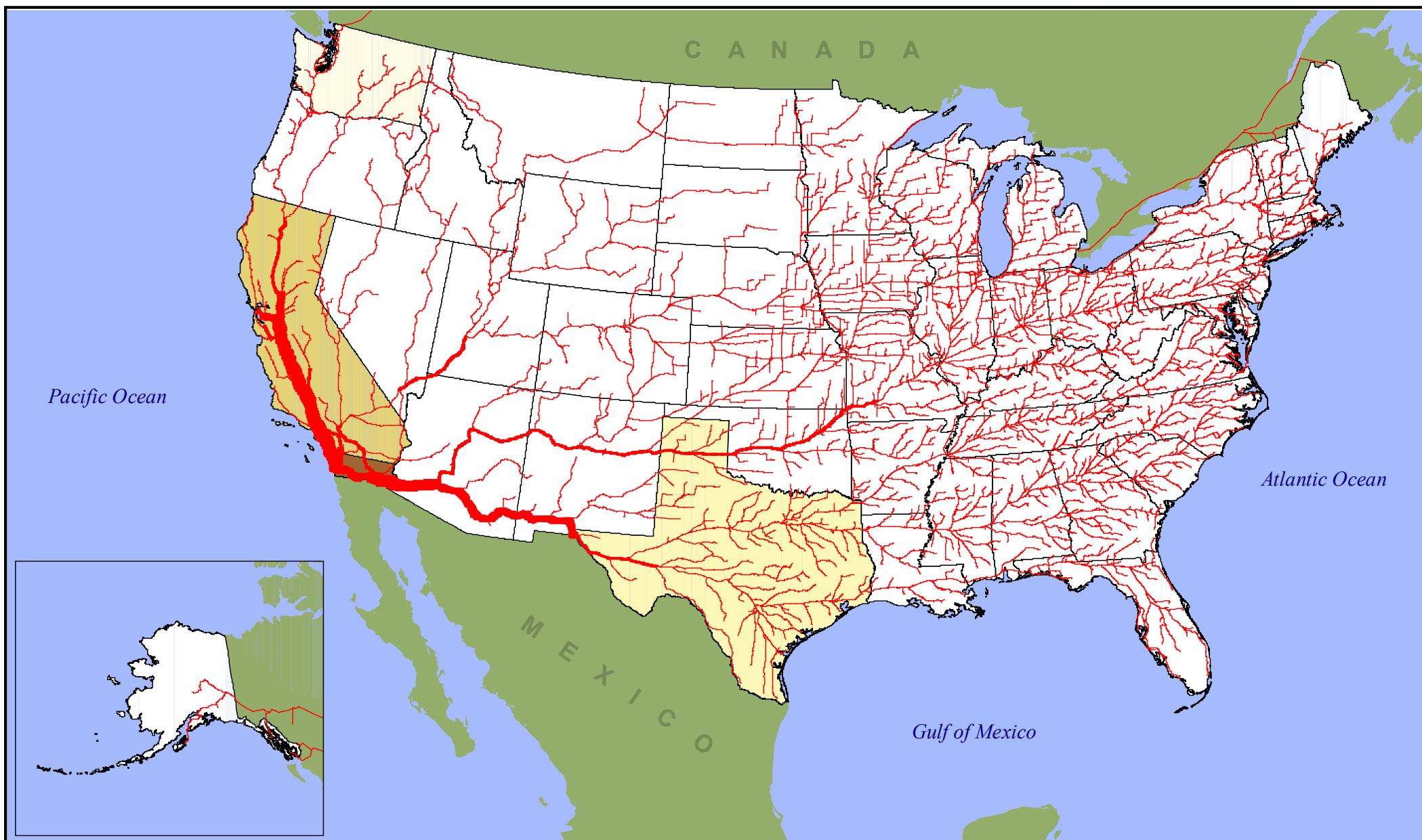
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# LAREDO

International Truck Flows for  
 Border Crossings  
 (1998)

Border Crossing to State Flows (Tons)	
	1 to 250,000
	250,001 to 500,000
	500,001 to 1,000,000
	More than 1,000,000

Network Flows (Tons)	
	1 to 250,000
	250,001 to 500,000
	500,001 to 1,000,000
	More than 1,000,000



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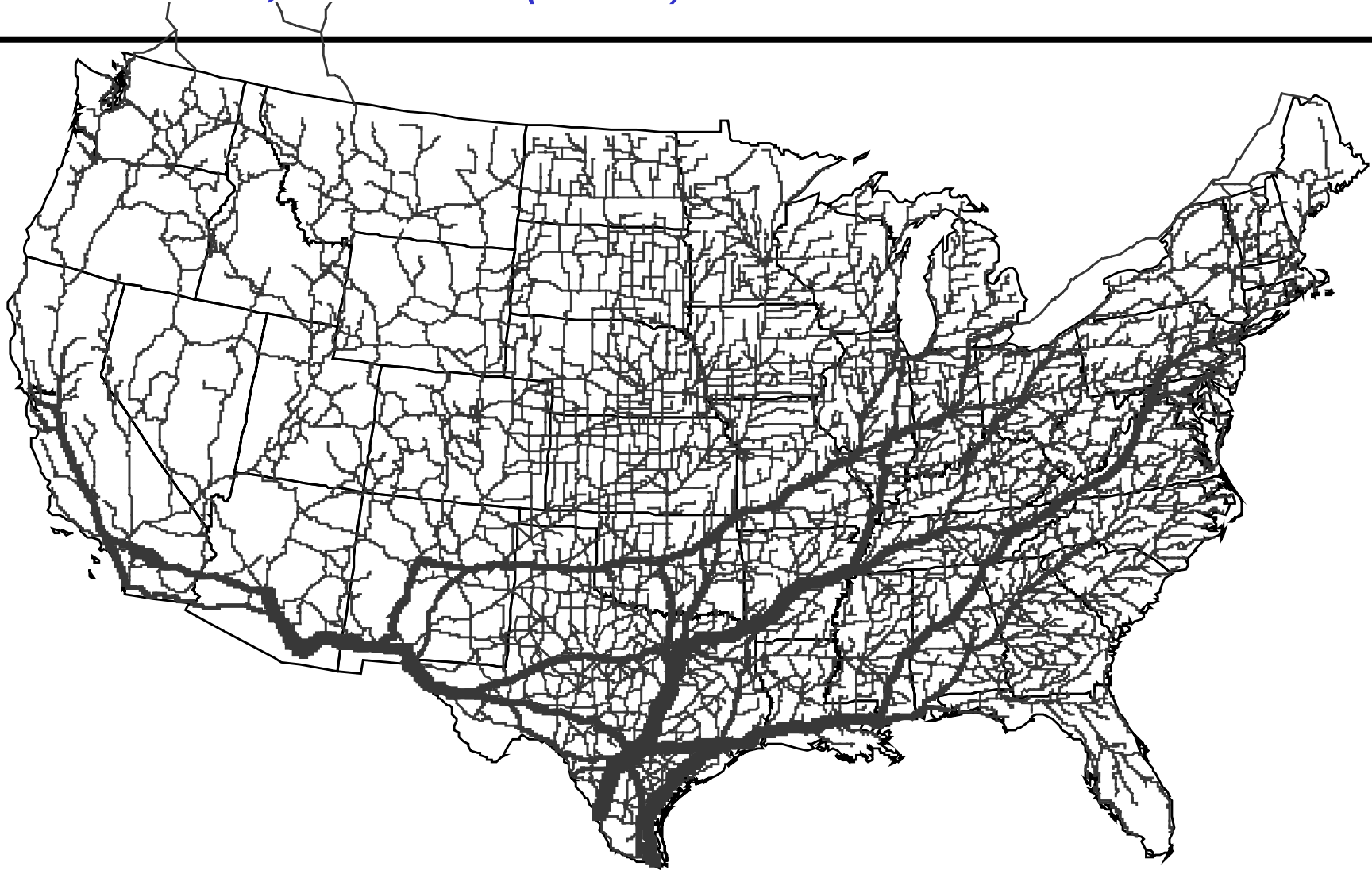
# SOUTHERN CALIFORNIA

International Truck Flows for  
 Border Crossings  
 (1998)

Border Crossing to State Flows (Tons)	Network Flows (Tons)
1 to 250,000	1 to 250,000
250,001 to 500,000	250,001 to 500,000
500,001 to 1,000,000	500,001 to 1,000,000
More than 1,000,000	More than 1,000,000

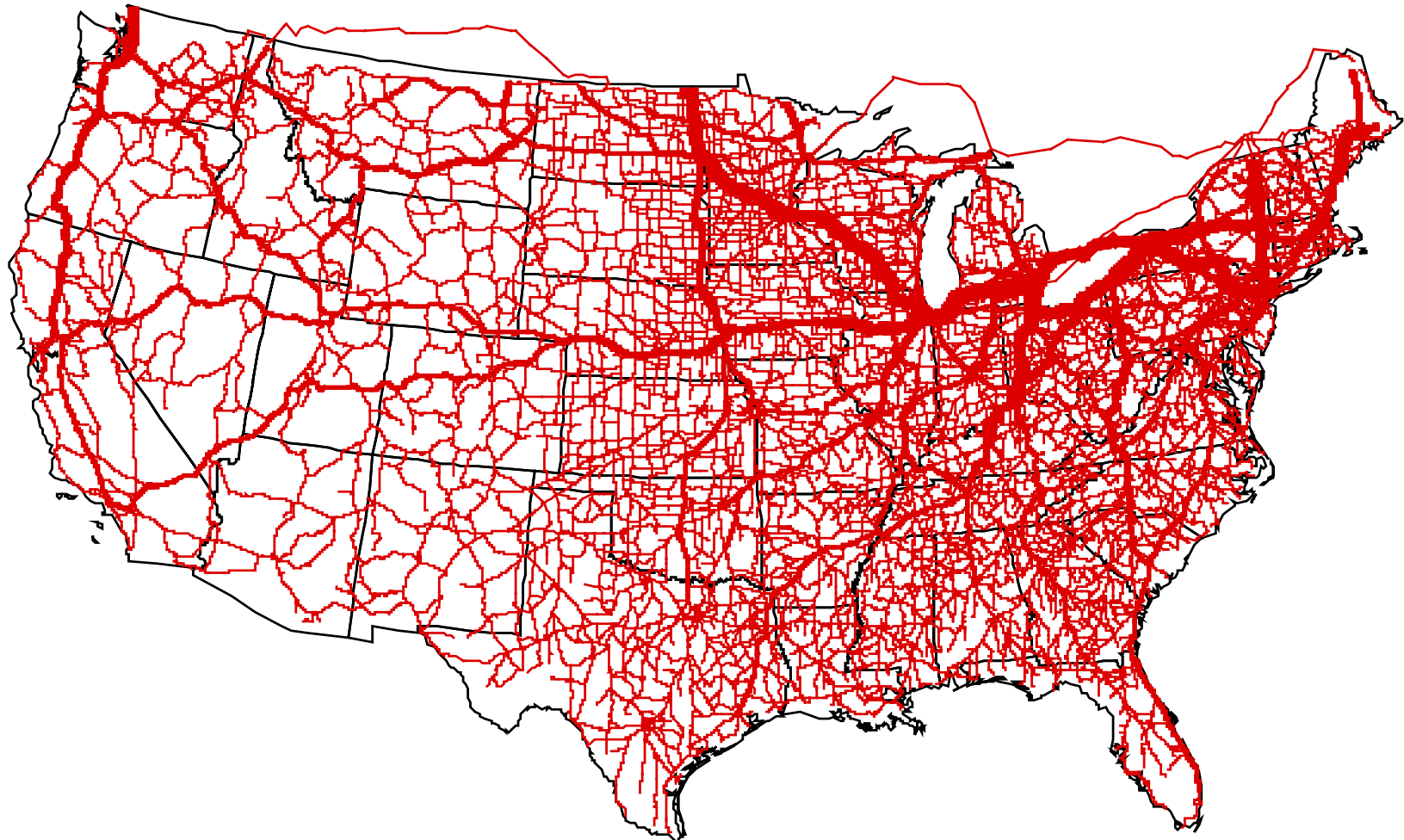
# *US/Mexico Truck Traffic on US Highway Network, 2020 (Tons)*

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# *US-Canadian Truck Traffic on US Highway Network, 2020 (Tons)*

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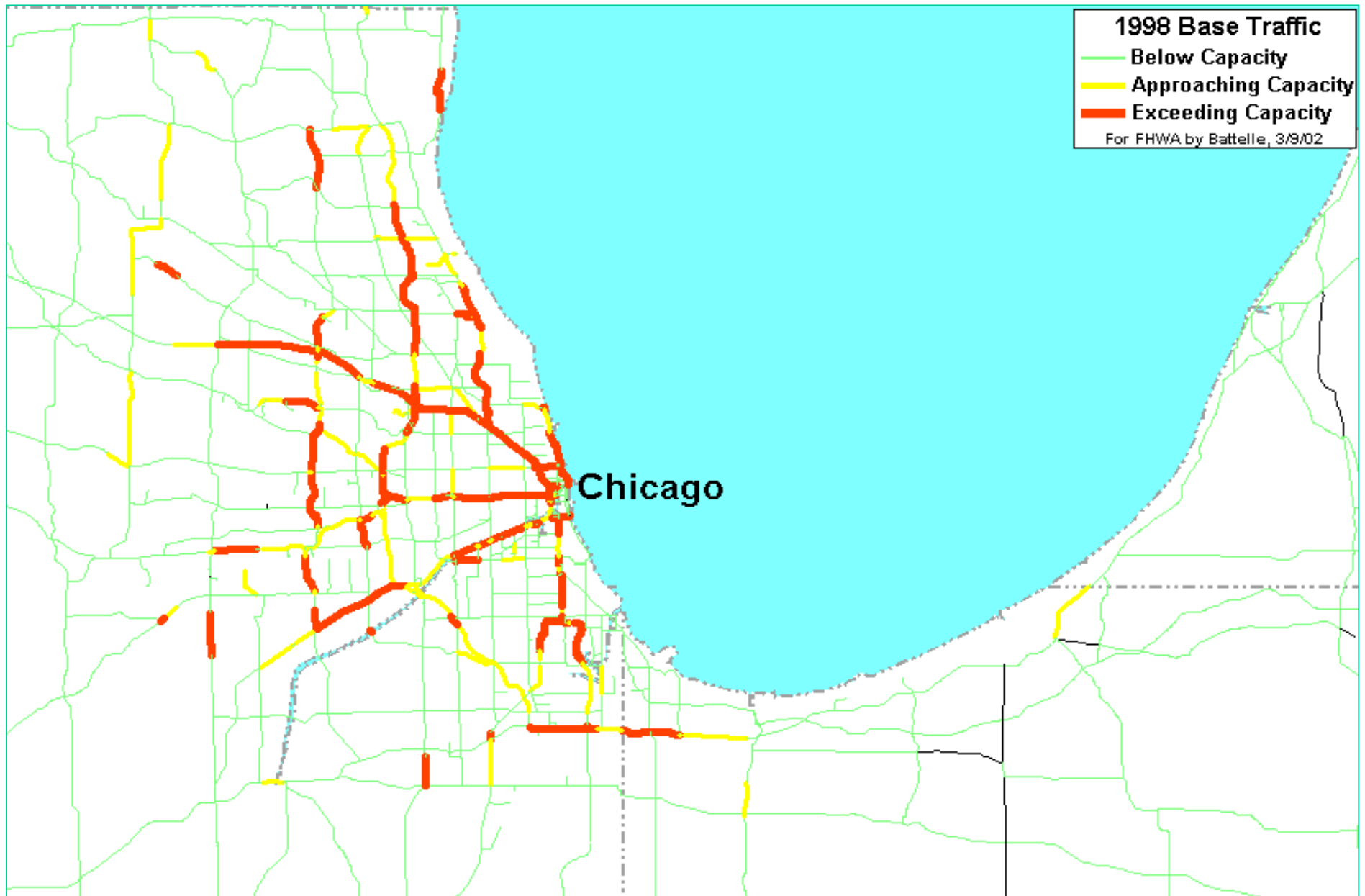


# *NHS Intermodal Connectors*



## ●NHS Connectors

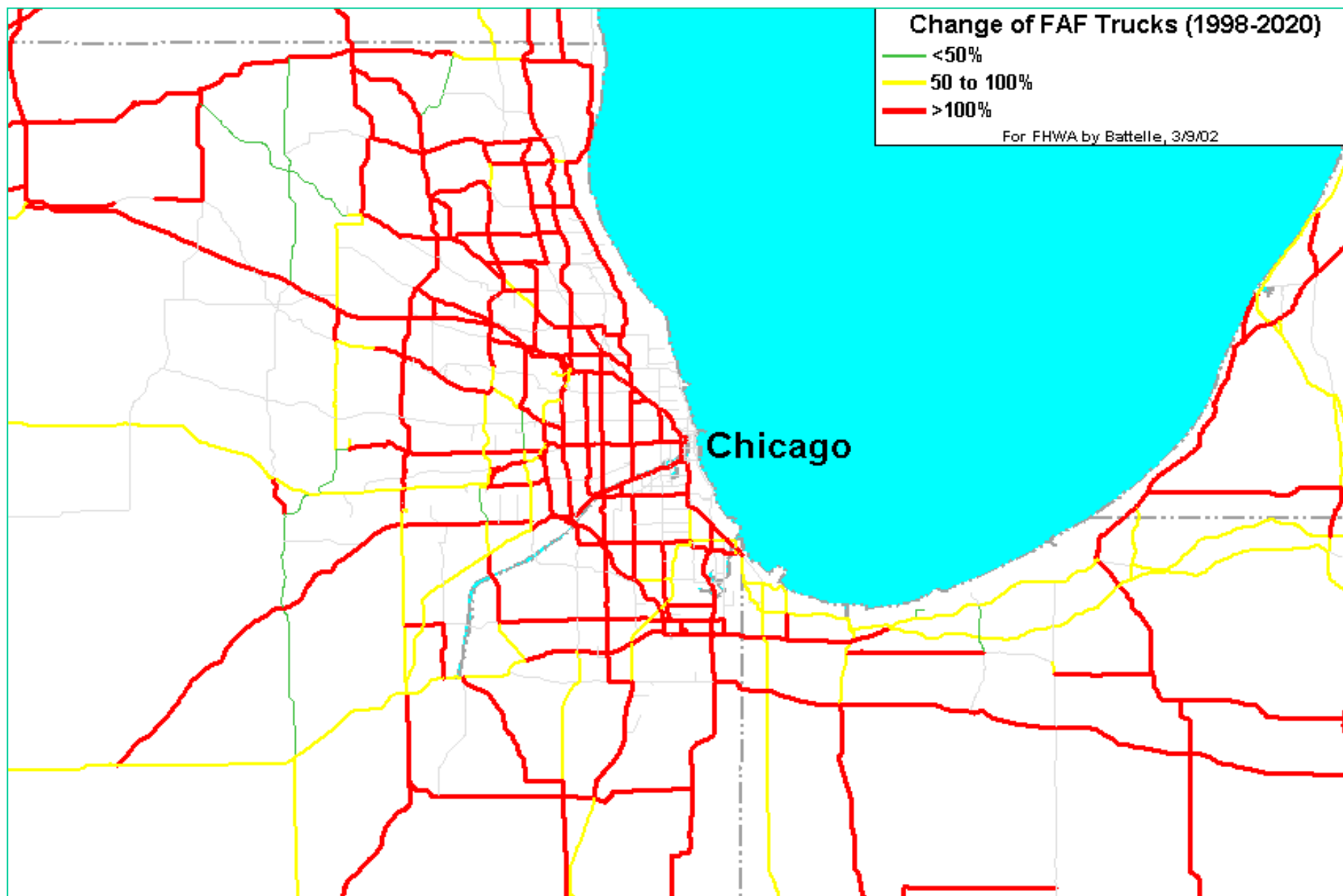
- Poor physical condition
- Poor geometrics
- “orphan status”
- inadequate coordination of investment strategies
- Port connectors to marine ports are notably deficient









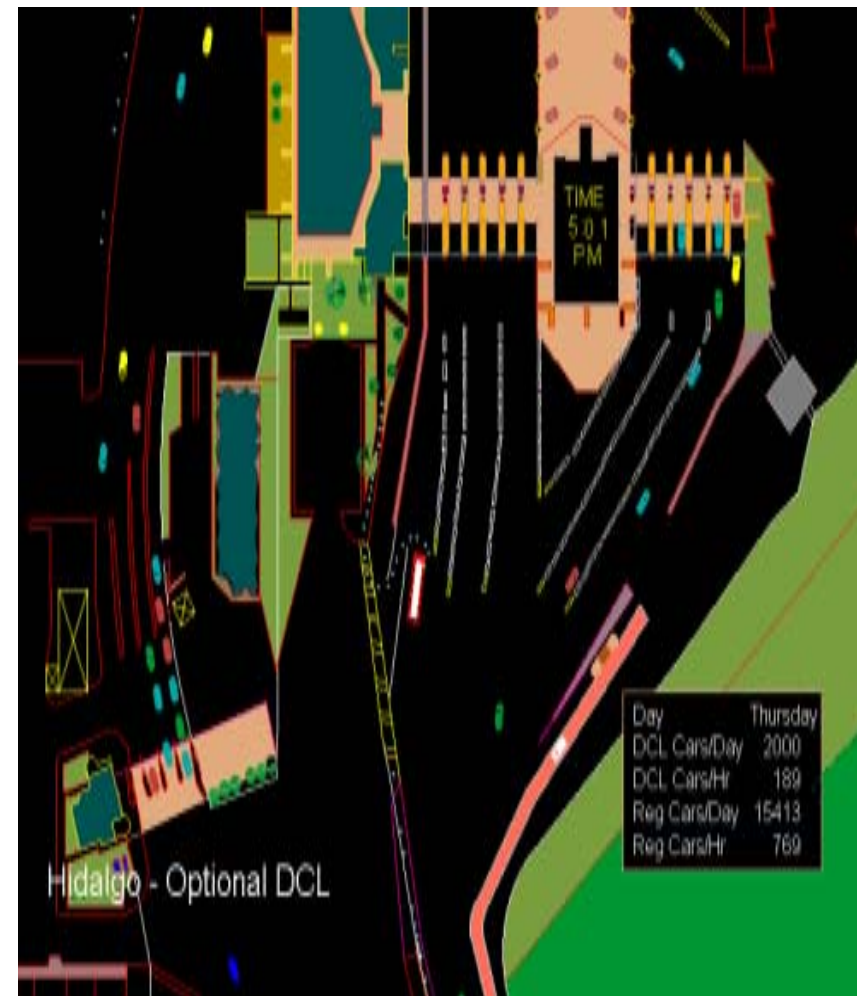




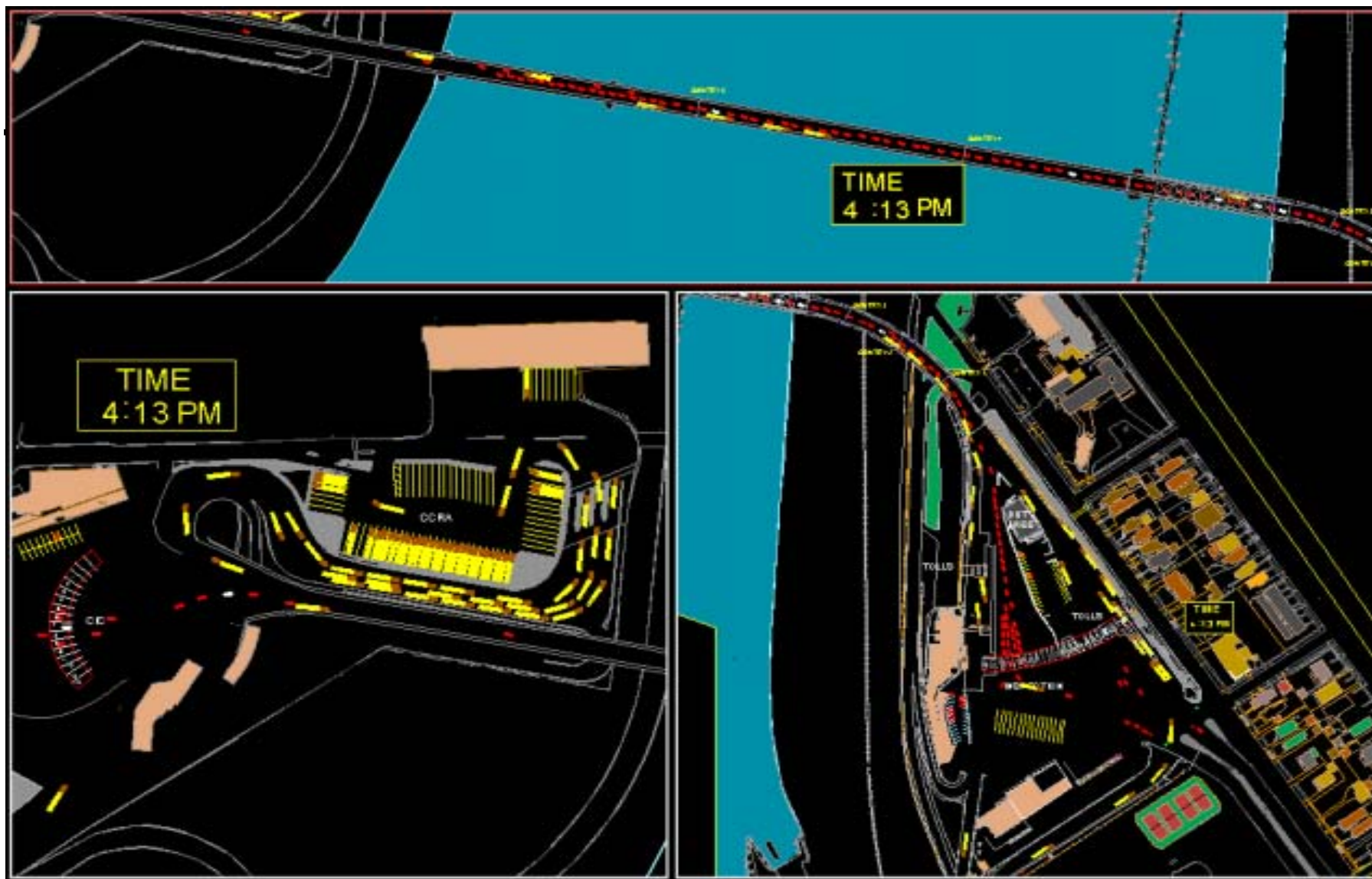
## How will the model be used?

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- Evaluate the influences of changes in demand, inspection operations, and technology applications for trade facilitation and security on infrastructure needs and port operations.
- Evaluate multiple border crossings to determine system wide impact of changes in system performance.
- Perform resource analyses to ensure effective levels of customer service.
- Analyze the impact on commercial and/or non-commercial vehicle wait times with changes in facilities.



# Peace Bridge...Buffalo, NY to Ft. Erie, ON



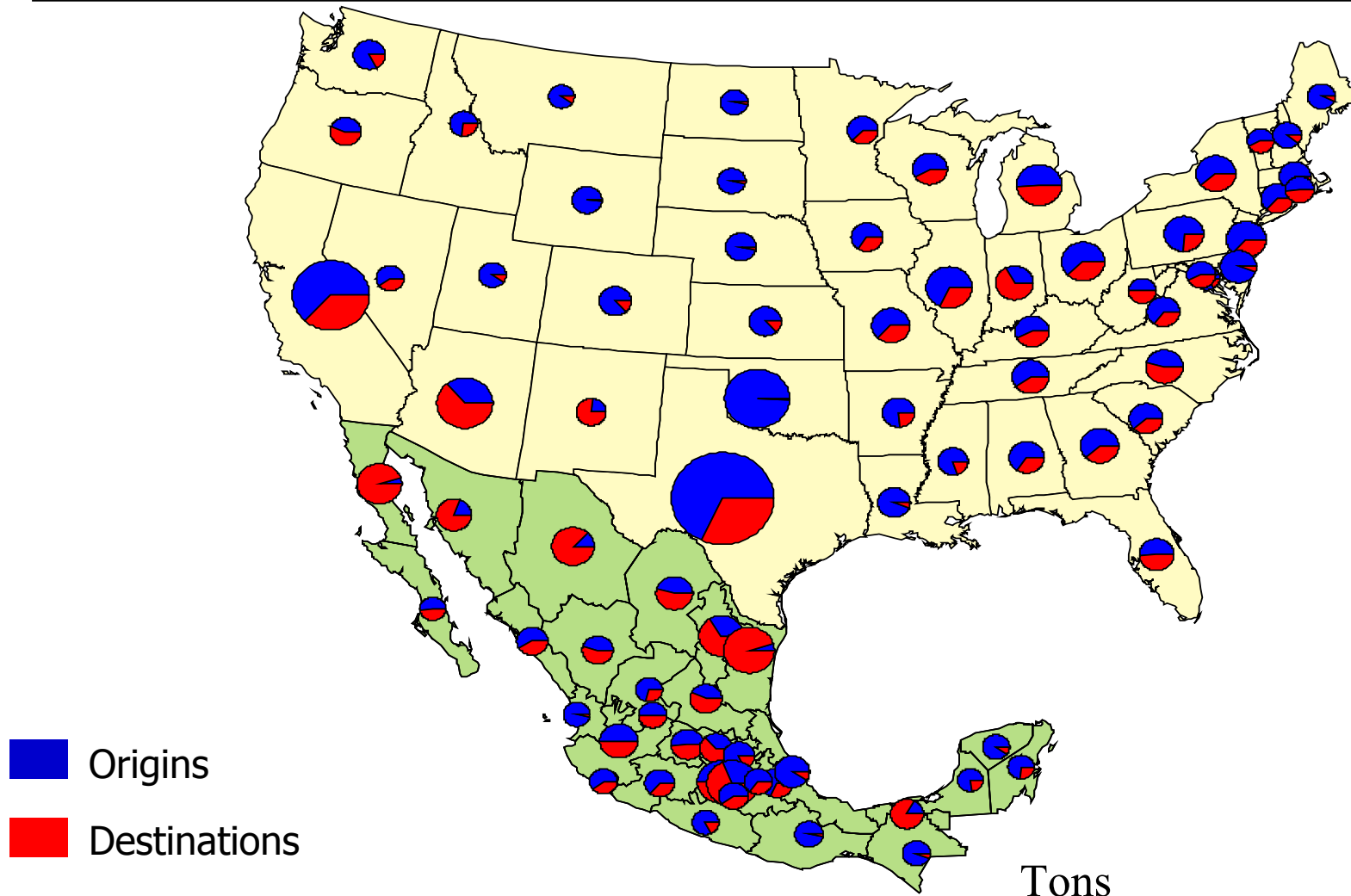
**Canadian Plaza**

**US Plaza**

# *U.S.- Mexican Truck Traffic – 1998*

## *(Tons)*

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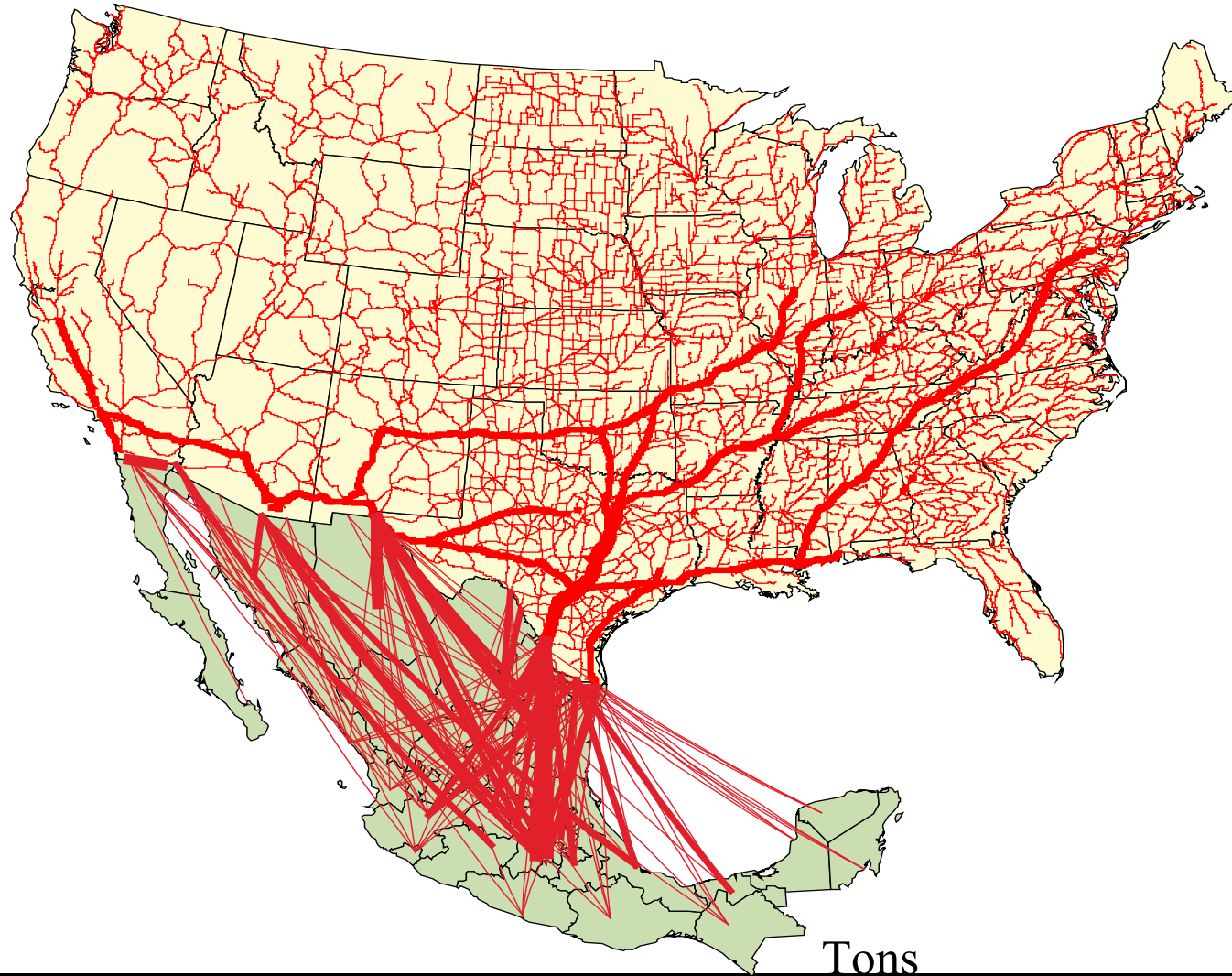




# *U.S.- Mexican Truck Traffic – 1998*

## *(Tons)*

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# Next Steps

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We are developing a “freight toolbox” :

- Verifying the flows
- Applying to national policy studies
- Providing output to state, local, and industry partners
- Can we extend the Freight Analysis Framework to Canada and Mexico?

***For further information:***

***<http://www.ops.fhwa.dot.gov/freight>***

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